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Zoning of marine protected areas: Conflicts and cooperation options in the Galapagos and San Andres archipelagos

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Abstract

Results are reported of an analysis of the conflicts that the zoning of marine protected areas might generate in the Galapagos and San Andres archipelagos given the involved stakeholders' competing interests. This will assist stakeholders, including the final decision makers, to develop cooperation strategies for managing conflicts. Specifically, the analysis focused on the stakeholders' conflicting priorities for a number of criteria deemed relevant to the evaluation of alternative geographical zoning configurations. Sets of statistically similar priorities are suggested as bargaining positions to those stakeholders who find it advantageous to seek cooperation with others sharing the same values instead of acting alone when debating MPA zoning alternatives. Another result that will contribute to cooperation strategies is the assessment of the solidarity of cohort groups of stakeholders as reflected by the extent of similarity among their priorities.

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1. Introduction

1.1. The scope

The designation of multiple-use "marine protected areas" (MPAs) is an alternative strategy for managing large and diverse marine ecosystems. Regardless of how one views its comparative advantage over other strategies, its implementation shares with that of all other alternatives the problems created by the dual reality of: (a) the collectivity of its objective (more than one stakeholder is involved) and (b) the feasibility of more than one choice of strategy to achieve this objective. (Even in the remote case that there is a unique strategy to be found, there are still the two choices of either implementing this strategy or preserving the status quo.) Most of these problems relate to the tragedy of the commons threat, the prisoners dilemma paradox, and the logic of collective action [1]. At their core lie conflicts of interest among the involved stakeholders, including those mandated to decide, and the challenges confronting the management of these conflicts.

The ramification for all stakeholders is that their decision problem goes beyond that of determining which MPA designation will best satisfy their own self-interest solely on the basis of their own criteria and priorities (values). They face an interactive and competitive situation in which the pursuit of their self-interest will also depend on the others' choices. Hence, the only option for all stakeholders to best serve their self-interest is to engage in *strategic thinking and analysis*, i.e., in an effort to anticipate, influence, or adapt to the possible choices of the others as well as to the strategies that others might pursue to influence the final decision, e.g. political pressure (lobbying) and forming coalitions for cooperative action. The outcome of this effort must be a *cooperation* strategy for each stakeholder with two targets: (a) the final choice of MPA zones and (b) the effective implementation of this choice. This cooperation may involve private or collective bargaining among few or a large number of stakeholders. Failure to develop a cooperation strategy and act on it in concert with others does not mean that the stakeholders will not eventually cooperate. However, their cooperation will be coerced by the enforcement of a final decision, which will inevitably be made by the appropriate authority and which might be a worse alternative to a cooperative choice. In such cases, the stakeholders may actually consider another form of cooperation as necessary, that which will enable them to resist the implementation of such final decisions.

We submit that final decision makers too can best serve their own self-interest (e.g. in preserving their power to decide) as well as the collective interest they have been mandated to enhance by considering ways to promote the broadest feasible cooperation among stakeholders as well as by their own participation in this cooperation. For only then can they maximize the effectiveness of the implementation of their final choice Lack of a cooperation strategy does not necessarily entail that decision makers cannot impose their choice if it differs from the stakeholders' cooperative choice. What it might bring about though is an effort to implement their choice marred by legal challenges and discord, resulting in a less effective, if not questionable implementation. As a matter of fact, decision makers do always engage in bargaining and cooperation, but mostly with those few stakeholders with the power to influence them (e.g. lobbies with a variety of interests, other decision makers). Then, they impose their so bargained choices on the rest of the stakeholders with the conventional argument of following a normative approach that allows them to reach "objective" decisions satisfying some normative, expert-driven "best

choice'' criteria. However, such ''normative'' decisions have historically been exposed as ineffective, not succeeding to achieve their targeted objectives within their targeted time horizons [2].

This need for strategic thinking and cooperation strategizing by all stakeholders in the Galapagos and San Andres archipelagos, in this case for the zoning of MPAs, guided the research reported in this paper.

1.2. The research, its information output and its instrument

We preface the discussion of the specifics of the conducted research with the acknowledgment that formulating a cooperation strategy requires an array of information in addition to such other attributes as intuition, experience, familiarity with established institutional structures, and political savvy. Moreover, the range of needed information and the priority given to each of its components varies among stakeholders. Hence, no research can possibly completely inform all the intended users with its results. However, when a large number of stakeholders with diverse interests face a collective problem and agree with the fundamental proposition that they must think strategically and act cooperatively, then a research effort can produce information that can be meaningful to all.

We submit that the reported research generated such information because it assists stakeholders to ponder in a systematic way:

- The issues (*criteria*) that they believe must be debated as being pertinent to evaluating the relative merit of alternative MPA zoning plans. No stakeholder can avoid this debate regardless of the reasoning behind any final individual choice, because it is the starting point of any attempt to persuade the others to cooperate or accept others' choices.
- The comparative significance (*priority*) of these criteria for all involved stakeholders. No strategy of bargaining and cooperation with a large number of competing stakeholders can be formulated without an understanding of these priorities because otherwise there is no way of anticipating the response to a specific cooperation proposition.
- The similarities among the priorities of several stakeholders that might point to potential cooperation allies (*potential coalitions or cooperation strategies*). Forging a coalition in order to strengthen a bargaining position and exercise influence on the others' choices can only start with knowing who agrees on the varying significance of the issues involved.
- The extent to which the members of a cohort group of stakeholders agree on their priorities (*solidarity*). The strength of a bargaining position and cooperation strategy depends a great deal on the support they can receive from all stakeholders sharing a common interest affiliation or any other socioeconomic attribute. It is intuitively obvious that disagreeing peers lose the competitive advantage of whatever significance other stakeholders may attribute to their front.

This information was generated by applying an analytical support system of collective decision making referred to as Assessment of Group Options with Reasonable Accord (AGORA) with methodological foundations derived from the field of multicriteria (multiple objectives) evaluation and decision making as well as from the Core and Game

theories [1,3,4]. The AGORA application requires that a group of stakeholders agree to participate in a cooperative or "bottom-up" decision making process as opposed to waiting for a "top-down" or normative decision by the involved authorities. Their participation entails raising the issues that they consider relevant to a collective problem and answering a specially designed questionnaire regarding their priorities for these issues. Their payoff is the information described above. (AGORA also assists the evaluation of specific decision choices and the development of cooperation and compensation strategies for maximizing the support for some of these choices but this part was not applied in this case because no specific MPA zoning plans have been drawn up for the case study archipelagos as yet.)

Methodologically, AGORA estimates the priorities of the participating stakeholders (hence forth the terms stakeholder(s) and participant(s) will be used interchangeably) by the *direct ratio* method [5], which also determines the format of the AGORA questionnaire (a sample of the characteristic questions is given in the Appendix A). According to this method, the participants are asked to first rank the criteria in order of significance and then to indicate for each pair of consecutively ranked criteria how much more significant is the top ranked criterion over that ranked below it. The potential coalitions are identified by a *k-means Cluster Analysis* (Euclidean distance) and the solidarity of cohort groups of participants with ANOVA.

We must re-emphasize that the focus of an AGORA application is to analyze the priorities of a set of stakeholders for the sake of helping these particular stakeholders develop strategies of cooperation. No effort is made to determine a single set of priorities that might be considered statistically representative of all stakeholder priorities because the objective is to deal with priority conflicts not to obfuscate them under the rubric of some statistical parameter estimation and the unavoidably ensuing debate of its representativeness. Hence, although an effort for the greatest possible participation of stakeholders should be the goal, there should be no concern with the statistical representativeness of the set of final participants. The same applies to the interest in having more than one stakeholder associated with a particular kind of interest participating. The objective is to obtain a sense of the potential solidarity of stakeholders sharing common interests, not to achieve statistically valid stratification of interests.

1.3. The case studies

The case studies of the Galapagos and San Andres Archipelagos are discussed in detail by Baine et al., Mow et al. and Heylings et al. (in this Special Edition). The fortunate circumstance is also discussed of having groups of stakeholders already engaged in a participatory examination and debate of the issues facing them before the initiation of this project.

In this introduction we simply stress that the AGORA application and the information sought with this application was generally the same in the two case studies with only one exception. In the San Andres case, the application was extended to also focus on the participants' preferences for percentage area distributions among various types of MPAs. The interest in this distribution is justified by the fact that deciding on the size of each MPA is a critical component of any choice of a zoning plan. A similar analysis to that described above for the participants' priorities was then performed of these area distribution preferences to ascertain: (a) similar preferences that might lead to cooperation

strategies; and (b) the solidarity of cohort groups. Other minor differences between the two case studies relate primarily to questions probing the participants' characteristics and were dictated by information needs particular to the two case studies.

2. Results of the Galapagos case study

2.1. The participants

One hundred and thirty-eight stakeholders answered the AGORA questionnaire properly in the Galapagos case study. They were primarily from the islands of Santa Cruz, Isabela, and San Cristobal and their affiliations were divided into "general" and "special" according to their general and specific interests. The distributions of the stakeholders according to this categorization and place of residence appear in Table 1.

Table 1
Distribution of stakeholders according to general–special interest affiliations and place of residence: Galapagos islands

General—special affiliations	San Cristobal	Santa Cruz	Isabela	Floreana	Cont. Ecuador	Total
Fishing sector	**33**	**17**	**14**			**64**
Fishing diver	8	6	6			20
Scale fish	12	6	1			19
Fishing boat owner	6	3	3			12
Women's association	4	1	3			8
Fish trader	3	1	1			5
Tourism sector	**8**	**22**	**7**			**37**
Bay tour operator		2				2
Diving tour operator	1	4				5
Cruise operator	1	3				4
Daily tour operator		3				3
Hotel industry			1			1
Surfing	3		4			7
Naturalist guide	2	9	2			13
Tourism association	1	1				2
Conservation sector	**5**	**8**	**9**	**1**	**1**	**24**
Scientist		1				1
Educator	4	1	2			7
Park ranger		2	1			3
Youth group		2	2		1	5
International NGO	1	2	4	1		8
Institutions and authorities	**3**	**2**	**4**			**9**
Public sector	3	1	4			8
Control and vigilance organisation		1				1
Other	3		1			4

Table 2
General (root) evaluation criteria: Galapagos

A.	*Fishing Development* The extent that zoning contributes to artisanal fishing development in Galapagos
B.	*Tourism Development* The extent that zoning contributes to tourism development in Galapagos.
C.	*Equity* The degree to which positive and negative impacts of zoning are shared equally among all those involved.
D.	*Knowledge generation* The extent that zoning stimulates new knowledge
E.	*Implementability* The extent that extent zoning may be carried out as approved
F.	*Protection of the marine environment* The extent that zoning contributes to maintain the marine environment, including fishing, tourism and scientific interest resources

2.2. The evaluation criteria

The debate among the local stakeholders, of the issues regarding MPAs that most concern them, led to the finalization of the six general evaluation criteria (or "root" criteria) defined in Table 2. Each of these criteria was associated in turn with a number of sub-criteria (or "branch" criteria). Tables 3a–3f present the definitions of these branch criteria.

2.3. The potential coalitions (cooperation strategies) and group solidarity

The AGORA analysis of the participants' priorities for the above "root" criteria yielded the three major potential coalitions (clusters) shown in Table 4 (the bold numbers indicate the highest priorities of each potential coalition). The ANOVA results are also presented with the relative size of the statistic F indicating the contribution of each criterion to the separation of the clusters at a <0.05 significance level. The affiliation of the members of these coalitions with the defined general and special interest categories is presented in Table 5. The distribution of cluster members according to their place of residence is shown in Table 6. Finally, the results of a similar analysis of the participants' priorities for the "branch" or sub-criteria are shown in Tables 7 and 8. (Bold names and numbers in Table 7 imply that a criterion plays a statistically important role in differentiating among clusters.)

2.4. Analysis

As we implied in the introduction, the information provided by Tables 4–8 may have a varying effect on each participant's stand and cooperation strategy regarding the zoning of MPAs. Nevertheless, the interpretation of this information cannot vary significantly. For the participants, this interpretation points to the following conclusions:

- The two major issues that cause stakeholders to differ are "fishing development" (advocated by the third cluster) and "protection of marine environment" (supported by the second cluster) as shown in Table 4.

Table 3a
The sub (branch) criterion of "fishing development": Galapagos

A1. *Open access to all the zones for the fishing sector*
In order to develop the sector, fishing is permitted in all of the Marine Reserve
A2. *Fisheries specialization*
In order to develop the fishing sector, fishing efforts should be divided between coastal fishing and deep-sea
A3. *Establishment of permanent breeding grounds*
In order to develop the fishing sector certain areas of the Marine Reserve are designated where fishing is not allowed
A4. *Establishment of temporary recovery zones*
In order to develop the fishing sector, temporary zones are designated where extractive activities, such as fishing, are not permitted. This allows the restoration of species and ecosystems (for example those affected by spillages or overfishing)
A5. *Establishment of areas for fishing use only*
In order to develop the fishing sector, zones are designated where the only activity permitted is fishing

Table 3b
The sub (branch) criterion of "tourism development": Galapagos

B1. *Open access to any zone for the tourism sector*
In order to develop the sector, tourism activities are permitted in all of the Marine Reserve
B2. *Establishment of no-take areas*
In order to develop the tourism sector, zones are designated where extractive activities, such as fishing, are not permitted
B3. *Protection of ecosystems and key species for tourism*
In order to develop the tourism sector, the ecosystems and species such as sea lions and sharks that attract tourists should be protected
B4. *Zoning for specific types of tourism*
In order to develop tourism, certain zones are established where you can realize activities such as diving, kayaking or sports fishing, and other zones where these activities are not permitted

Table 3c
The sub (branch) criterion of "equity": Galapagos

C1. *Equitable law enforcement*
The zoning laws should be enforced on an equal basis to all the Marine Reserve users
C2. *Equitable distribution of impacts among user sectors*
Zoning has an equal impact on all the sectors that use the Marine Reserve
C3. *Equal distribution of tourism opportunities*
The development of new tourism activities favors all the interested sectors
C4. *Equitable management among islands*
Decisions made about zoning should affect the stakeholders in the inhabited islands equally
C5. *Participation of inland industrial vessels in fisheries*
Zoning allows an equal distribution of the Galapagos Marine Reserve's resources between the local artisanal fishing sector and the continental industrial fishing sector

Table 3d
The sub (branch) criterion of "knowledge generation": Galapagos

D1.	*Knowledge on socio-economic effects* The socio-economic effects of zoning should be known
D2.	*Promoting educational uses* Zoning allows the community to learn about the marine environment
D3.	*Generating scientific information* Zoning allows for a better understanding of how the marine environment works
D4.	*Involvement in monitoring to measure zone effectiveness* All the direct stakeholders participate in collecting and analyzing the zoning information in order to make better decisions

Table 3e
The sub (branch) criterion of "implementability": Galapagos

E1.	*Penalty application* For zoning to work, penalties should be applied, may be applied to all those violators thereof
E2.	*Voluntary willingness of people to follow zoning* For zoning to work, the stakeholders should respect zoning on their own initiative
E3.	*Facility to respect limits among zones* For zoning to work, the different zones should not be confusing or complicated to allow for complying with zoning
E4.	*Zoning enforcement facility* Zoning should be designed so that the authority can check that it is being obeyed
E5.	*Participation in zoning decisions* To implement zoning, the different stakeholders should participate in decisions about it

Table 3f
The sub (branch) criterion of "protection of the marine environment": Galapagos

F1.	*Mitigation of incidental fishing impacts* Creation of specific deep-sea fishing zone to avoid incidental catch
F2.	*Maintaining biogeographical representativity* Zoning includes protection areas representative of the different areas of the Archipelago: cold, hot and mixed waters
F3.	*Protection of threatened or endangered species* Zoning protects the most vulnerable species
F4.	*Protection of sites with high biodiversity* Zoning protects the sites that have the most species
F5.	*Habitat recovery* Zoning allows recovery of marine sites that human activity or natural phenomena like El Niño have degraded

- The third cluster (comprised of about 15% of the participants) with its almost exclusive interest in fishing development might encounter difficulties in trying to solicit support for its values from other stakeholders because of the following findings:

Table 4
Potential coalitions (clusters) and their priorities for the general criteria: Galapagos

General criteria	Cluster 1	Cluster 2	Cluster 3	ANOVA	
				F	Sig.
Equity	**0.226**	0.037	0.043	15.503	0.000
Fishing development	0.104	0.021	**0.839**	430.556	0.000
Knowledge generation	0.162	0.021	0.028	11.210	0.000
Possibility of implementation	0.122	0.023	0.009	8.287	0.000
Protection of marine environment	**0.221**	**0.880**	0.034	304.169	0.000
Tourism development	0.165	0.019	0.047	8.565	0.000

Table 5
General and special interest affiliation of coalition (cluster) members with similar priorities for the general criteria: Galapagos

General and special categories of stakeholders	Cluster 1	Cluster 2	Cluster 3	Total
Fishing sector	**34 (53.1%)**	**10 (15.6%)**	**20 (31.3%)**	**64 (46.4%)**
Fishing diver	11	4	5	20
Scale fish	8	4	7	19
Fishing boat owner	6		6	12
Women's association	4	2	2	8
Fish trader	5			5
Tourism sector	**22 (59.5%)**	**14 (37.8%)**	**1 (2.7%)**	**37 (26.8%)**
Bay tour operator	2			2
Diving tour operator	2	3		5
Cruise operator	2	2		4
Daily tour operator	3			3
Hotel industry			1	1
Surfing	5	2		7
Naturalist guide	6	7		13
Tourism association	2			2
Conservation sector	**15 (62.5%)**	**9 (37.5%)**		**24 (17.4%)**
Scientist		1		1
Educator	3	4		7
Park ranger	3			3
Youth group	2	3		5
International NGO	7	1		8
Institutions and authorities	**8 (88.9%)**	**1 (11.1%)**		**9 (6.5%)**
Public sector	8			8
Control and vigilance organization		1		1
Other	**4 (100%)**			**4 (2.9%)**
Total	**83 (60.1%)**	**34 (24.6%)**	**21 (15.2%)**	**138 (100%)**

- They differ significantly from all other stakeholders with the priorities. According to Table 4, the second cluster, which supports most adamantly the opposing issue of protecting the marine environment, assigns a very low priority to the concern for fishing development. The same is true for the first cluster, whose priorities are shared

Table 6
Place of residence of coalition (cluster) members with similar priorities for the general criteria: Galapagos

Place of resident	Cluster 1	Cluster 2	Cluster 3	Total
San Cristobal	27	13	12	52
Santa Cruz	32	13	4	49
Isabela	23	7	5	35
Floreana	1			1
Continental Ecuador		1		1
Total	**83**	**34**	**21**	**138**

by the great majority of the participants, although not to the same extent. This cluster assigns the lowest priority to this concern but not as low as that of the second cluster.

- They are almost all fishers (20 out of 21 as shown in Table 5) and mostly (57%) from the same island of San Cristobal (Table 6). Hence, their effort to augment their membership through cooperation will be hindered by this narrow base.
- Their solidarity with the rest of their cohort group of "fisheries" does not appear favorable. They constitute only 31.3% of this cohort group (Table 5), half as many of their cohorts agree with the priorities of the second potential coalition and half of all their cohorts support the more balanced set of priorities of the first coalition (Table 5).

- The focus on one issue of the third cluster, on the other hand, may give to its members a bargaining advantage especially if the balanced priorities of the first coalition imply a less politically active group of stakeholders. If this is indeed the case, then the fact that almost half of the fishers are members of the first cluster may indicate an even greater advantage and opportunity for the third cluster to augment its membership by attracting members from the first cluster and influence final decisions.
- The same applies though to the second cluster which contains 24.6% of the participants. It too focuses only on one issue, indicating perhaps another dedicated group. Furthermore, its membership is more balanced, comprised by stakeholders belonging to "tourism", "fisheries" and "conservation" general interest categories (Table 5). More importantly, its issue is ranked second by the large first coalition indicating a greater potential for recruitment from this coalition than that of the third cluster (Table 4).
- The weakness of the second cluster may relate to the fact that its members constitute less than the majority of their corresponding cohort groups (Table 5). Hence, unless they can cement their agreement on their priorities with a willingness to actively recruit cohort participants, particularly from the large pool of the first cluster, they may face the reverse pressure of having to join the first or another new coalition.
- The priorities of the sub-criteria, shown in Table 7, also indicate a greater advantage of the second cluster over the third regarding recruitment potential from the first cluster, always under the assumption that the latter will not itself actively engage in recruiting. The support of the second cluster for the protection of the marine environment is divided mainly among the sub-criteria of "protection of threatened or endangered species", "maintaining biogeographical representativeness" and "mitigation of impacts of incidental catch". Similarly, the support of the third cluster for fishing development is

Table 7
Potential coalitions (clusters) and their priorities for the sub-criteria: Galapagos

General criteria	Special criteria	Cluster 1	Cluster 2	Cluster 3	ANOVA
Fishing development	**A1. Open access to all the zones for the fishing sector**	0.019	0.001	**0.448**	**82.816**
	A2. Fisheries specialization	0.025	0.004	**0.318**	**38.314**
	A3. Establishment of permanent breeding grounds	0.021	0.002	0.006	**8.682**
	A4. Establishment of temporary recovery zones	0.048	0.056	0.009	2.486
	A5. Establishment of areas for fishing use only	0.024	0.001	0.032	1.169
Tourism development	B1. Open access to any zone for the tourism sector	0.041	0.003	0.006	1.898
	B2. Establishment of No-Take Areas	0.024	0.003	0.032	2.455
	B3. Protection of ecosystems and key species for tourism	**0.054**	0.006	0.005	**7.423**
	B4. Zoning for specific types of tourism	0.044	0.002	0.006	2.229
Equity	**C1. Equitable law enforcement**	**0.09**	0.01	0.011	**4.714**
	C2. Equitable distribution of impacts among user sectors	**0.049**	0.009	0.003	**4.177**
	C3. Equal distribution of tourism opportunities	0.034	0.011	0.018	**3.294**
	C4. Equitable management among islands.	0.031	0.005	0.005	**6.103**
	C5. Participation of inland industrial vessels in fisheries	0.019	0.002	0.004	1.832
Knowledge generation	D1. Knowledge on socio-economic effects	0.027	0.004	0.003	**10.365**
	D2. Promoting educational uses	**0.051**	0.006	0.01	**3.446**
	D3. Generating scientific information	0.032	0.007	0.005	**6.286**
	D4. Involvement in monitoring to measure zone effectiveness	0.046	0.005	0.02	2.653
Implementability	E1. Penalty application	0.03	0.005	0.003	1.57
	E2. Voluntary willingness of people to follow zoning	0.025	0.006	0.001	**5.952**
	E3. Facility to respect limits among zones	0.024	0.004	0.002	**4.798**
	E4. Zoning enforcement facility	0.018	0.003	0.001	**3.607**
	E5. Participation in zoning decisions	0.022	0.007	0.006	**4.522**
Protection of the marine environment	F1. Mitigation of incidental fishing impacts	0.044	**0.143**	0.01	**7.401**
	F2. Maintaining biogeographical representativity	0.029	**0.16**	0.006	**13.857**
	F3. Protection of threatened or endangered species	**0.052**	**0.334**	0.007	**31.257**
	F4. Protection of sites with high biodiversity	**0.057**	**0.199**	0.012	**15.161**
	F5. Habitat recovery	0.022	0.004	0.013	**5.94**

Table 8
General and special interest affiliation of potential coalition (cluster) members with similar priorities for the sub-criteria: Galapagos

General and special categories of stakeholders	Cluster 1	Cluster 2	Cluster 3	Total
Fishing sector	**35**	**9**	**20**	**64**
Fishing diver	11	3	6	20
Scale fish	9	4	6	19
Fishing boat owner	6		6	12
Women's association	4	2	2	8
Fish trader	5			5
Tourism sector	**23**	**13**	**1**	**37**
Bay tour operator	2			2
Diving tour operator	2	3		5
Cruise operator	2	2		4
Daily tour operator	3			3
Hotel industry			1	1
Surfing	5	2		7
Naturalist guide	7	6		13
Tourism association	2			2
Conservation sector	**15**	**9**		**24**
Scientist		1		1
Educator	3	4		7
Park ranger	3			3
Youth group	2	3		5
International NGO	7	1		8
Institutions and authorities	**8**	**1**		**9**
Public sector	8			8
Control and vigilance organization		1		1
Other	4			4

mainly divided between the two sub-criteria of "open access for fishing sector to all zones" and "specialization of fisheries". Comparing the priorities of these groups of sub-criteria between the first and second cluster as well as between the first and third cluster reveals that the difference is much smaller in the former case.

- The size of the first coalition (60.1% of the participants) and its balanced priorities may contribute to two different cooperation and conflict management outcomes:
  - If they are organized they can help the formation of an even larger coalition (drawing support mainly from the second cluster) and contribute significantly to the resolution of conflicts that might be generated by the feasible alternative zoning plans for MPAs.
  - Otherwise, they may be simply a pool ready to be persuaded by others to compromise their priorities and join other coalitions. This is a less positive sign for conflict resolution.
- The role of the first cluster as mediator and its attractiveness for the participants of the other two clusters as the basis of forming an even broader coalition may be enhanced by its high priority for the "equity" criterion and its sub-criteria (Tables 4 and 7).

For the final decision makers, the conclusions are straightforward, if they choose to take advantage of this participatory process and its signals for cooperation potentials instead of choosing to rely exclusively on expert-based, normative recommendations of what zoning plan for MPAs is "best". If they so choose, it will be advisable for them to:

- Work with the participants that form the first cluster to take advantage of their clear majority and balanced priorities in order to attract members from the other two clusters and establish an even broader coalition.
- Attempt to ameliorate the possible opposition of, particularly, the third cluster by pointing to the above observations and offer other appropriate incentives, e.g. a compensation scheme.

Finally, the above analysis should be put into perspective by keeping in mind that it refers only to issues and thus, the criteria that should apply in choosing a zoning plan for MPAs. When specific alternative MPA zoning plans are developed and evaluated according to the above criteria and priorities, there may be choices that further reduce the differences among the participants. This is possible when there are alternatives that perform better than others according to those criteria favored by different clusters of participants. Moreover, the above analysis is meaningful if MPAs are accepted as a management option for large marine ecosystems. In this Galapagos case study, participants were asked to indicate their support for this zonation option and the results, shown in Table 9, can be summarized as follows:

- The majority of the participants from all interest categories except the fishing sector express a positive attitude towards the zoning scheme.
- The most positive attitude is expressed by the tourism sector.
- About 50% of the fishing sector declares a negative attitude. Especially negative are the fishermen from the island of San Cristobal who also comprise the majority of the previously analyzed third potential priority coalition (cluster). This last finding, on the one hand further strengthens the above conclusions regarding the difficulties that the third cluster might have in expanding its membership. On the other hand, however, it may point to a great possibility for conflict management and nurturing much broader cooperation among the stakeholders, if a zoning plan can be drawn with special provisions for the San Cristobal island.

Table 9
Attitudes of participants towards zonation by general interest affiliation: Galapagos

	Totally unfavorable	Unfavorable	Indifferent	Favorable	Totally favorable
Fisheries	11	15	6	22	6
Tourism	1		1	16	19
Conservation			1	14	8
Authorities		2	2	2	3
Total	**12**	**17**	**10**	**54**	**36**

3. Results of the San Andres case study

3.1. The participants

Eighty-seven stakeholders answered the AGORA questionnaire properly. Their interest affiliations have been divided into the "general" and "special" categories shown in Table 10.

3.2. The criteria

The analysis of the issues that most concern local stakeholders led to the finalization of the five general or "root" evaluation criteria: (a) economic development, (b) environmental conservation, (c) equity, (d) implementability, and (e) traditional island environment. Each of these criteria was associated in turn with a number of sub or "branch" criteria as defined in Table 11a–11f.

3.3. The potential coalitions (cooperation strategies) and group solidarity

The results of the AGORA analysis of the participants' priorities for the above criteria yielded the results shown in Tables 12 and 13. The relative size of the statistic F of the

Table 10
Distribution of stakeholders by general and special interest affiliation: San Andres

General and special affiliation	No of individuals	Percent
Conservation	**10**	**11.5**
Environmental NGO	7	8.0
Environmental/native rights NGO	3	3.4
Education	**6**	**6.9**
Secondary programme	1	1.1
Technical programme	2	2.3
University programme	2	2.3
Post-graduate programme	1	1.1
Fisheries	**14**	**16.1**
Artisanal fishers	14	16.1
Government	**20**	**23.0**
National government	4	4.6
Local government	13	14.9
Armed forces	3	3.4
Tourism/recreation	**19**	**21.8**
Diving	8	9.2
Water sports	1	1.1
Tourism	10	11.5
Traditional user	**17**	**19.5**
Community action group	10	11.5
Civic group	5	5.7
Other traditional user	2	2.3
Unidentified	1	1.1
Total	**87**	**100**

ANOVA analysis indicates each variable's contribution to the separation of the groups, provided that the significance level is <0.05 (in bold numbers).

3.4. Analysis

For the stakeholders of the San Andres Archipelago, the information contained in Tables 12–15 can be analyzed as follows:

- There are three sets of priorities that can be used as the basis for forging coalitions, those supported by the three clusters of participants in Table 12.
- Each of these sets of priorities is dominated by that for a single general criterion, which implies a clear distinction among what the participants expect to achieve with appropriate zoning of MPAs:
  - A majority of a little more than 58% of the participants congregate to one cluster, favoring environmental conservation;

Table 11a
General (root) evaluation criteria: San Andres

A.	*Economic development* Development of the local economy
B.	*Environmental conservation* Preservation of the environment and natural resources
C.	*Equity* Distribution of benefits in a righteous and just way
D.	*Implementability* Possibility to put into practice
E.	*Traditional island environment* Preservation of traditional island quality of life

Table 11b
The sub (branch) criterion of "economic development": San Andres

A1.	*Artisanal fisheries growth* The extent to which zoning would lead to improved economic conditions for fishers using traditional boats and equipment
A2.	*Local industrial fisheries growth* The extent to which zoning would benefit the development of an island-based industrial fisheries industry
A3.	*National industrial fisheries growth* The extent to which zoning would benefit the national and international industrial fisheries industry
A4.	*Dive tourism growth* The extent to which zoning would lead to an increase in tourists coming to the islands particularly for diving related activities
A5.	*Ecotourism growth* The extent to which zoning would promote development of various forms of eco-tourism on the islands
A6.	*Large-scale tourism growth* The extent to which zoning would promote mass tourism on the islands
A7.	*New employment growth* The extent to which zoning would lead to other opportunities for different types of employment

Table 11c
The sub (branch) criterion of "environmental conservation": San Andres

B1.	*Endangered species protection* The extent to which zoning would lead to enhanced conservation of species listed nationally and internationally as needed extensive protection for recovery of their diminished numbers
B2.	*Fisheries recovery* The extent to which zoning would lead to a re-establishment of fish abundance and eventual increase in catch
B3.	*Habitat protection* The extent to which zoning would lead to marine habitat restoration
B4.	*Habitat recovery* The extent to which zoning would lead to protection of habitat important for marine species maintenance

Table 11d
The sub (branch) criterion of "equity": San Andres

C1.	*Equitable access* The extent to which zoning would lead to a fair distribution of resource access to all stakeholders
C2.	*Equitable exploitation* The extent to which zoning would lead to a just balance of opportunity for all stakeholders to use the available marine resources
C3.	*Equitable participation* The extent to which zoning would lead to a fair distribution of decision making opportunities for all stakeholders

Table 11e
The sub (branch) criterion of "implementability": San Andres

D1.	*Compliance with existing authorities* The extent to which zoning would conform to current existing legislation of all the different government agencies, and wouldn't alter current permits or regulations
D2.	*Enforcement* The extent to which zoning would simplify enforcement and monitoring of the MPA rules and regulations
D3.	*Location of zone boundaries* The extent to which the zoning would lead to easy identification of the zone boundaries for all the stakeholders
D4.	*Stakeholder agreement* The extent to which zoning would lead to stakeholder agreement
D5.	*Voluntary compliance* The extent to which zoning would lead to the ease with which all the stakeholders would voluntarily follow the regulations

- Almost a fourth of the participants (24.5%) establish the second cluster which supports the preservation of the traditional island environment; and
- The rest or 17.5% constitute the third cluster that supports economic development as the main objective of MPAs.

Table 11f
The sub (branch) criterion of "traditional island environment": San Andres

E1. *Harmony of sea and land uses*
The extent to which zoning would lead to compatible use and development of both land and marine resources
E2. *Planned coastal development*
The extent to which zoning would lead to appropriate management of development growth
E3. *Preservation of environmental beauty*
The extent to which zoning would lead to the maintenance of the physical beauty of the protected and adjacent areas
E4. *Preservation of traditional activities*
The extent to which zoning would not disturb traditional marine resource use

Table 12
Potential coalitions (clusters) and their priorities for the general criteria: San Andres

General criteria	Cluster 1	Cluster 2	Cluster 3	ANOVA	
				F	Sig.
Economic development	0.12	0.08	**0.58**	**86.683**	0.000
Environmental conservation	**0.47**	0.11	0.15	**23.208**	0.000
Equity	0.16	0.06	0.15	2.439	0.093
Implementability	0.11	0.02	0.03	**6.764**	0.002
Traditional island environment	0.15	**0.73**	0.09	**173.501**	0.000

- Of these three clusters, the third one appears to be the weaker in terms of its potential to convince other stakeholders to join them in the formation of a broad, dominant coalition. This is not only because of its minority status but also because its members constitute minorities of all the various interest groups (Table 13).
- The opposite is true for the first cluster. Its attractiveness as a basis for an expansive cooperation effort among stakeholders is augmented not only by its majority constituency of participants but also by the fact that its members represent majorities of five out of the six major interest affiliations (Table 13), i.e. conservation, education, fisheries, government, and tourism/recreation, as well as by 12 out of the 16 special interest affiliations (Table 13).
- The second cluster, which favors the preservation of a traditional island environment, offers the other potential strategy for a broad cooperation effort because of: (a) the number of participants agreeing with its priorities; and more importantly (b) the high consistency between the scope of its top priority and that of the interest affiliations whose majority side with this cluster, i.e. community action groups and civic groups.
- The advantage of the first two clusters as potential major cooperation coalitions is strengthened by the finding that with the exception of one special interest affiliation (Environmental NGOs), the solidarity among the members of all the other groups is rather extensive (Table 13). The negative side of this finding is that it may imply a more protracted effort for conflict management and the formation of a global coalition supporting a final choice of MPA zoning.

Table 13
General and special interest affiliation of coalition (cluster) members with similar priorities for the general criteria: San Andres

General and specific categories of stakeholders	Cluster 1	Cluster 2	Cluster 3	Total
Conservation	**5**	**2**	**3**	**10**
Environmental NGO	3	2	2	7
Environmental/native rights NGO	2		1	3
Education	**4**	**1**	**1**	**6**
Secondary programme		1		1
Technical programme	2			2
University programme	2			2
Post-graduate programme			1	1
Fisheries	**9**	**3**	**2**	**14**
Artisanal fishers	9	3	2	14
Government	**12**	**3**	**5**	**20**
National government	3	1		4
Local government	7	2	4	13
Armed forces	2		1	3
Tourism/recreation	**17**	**1**	**1**	**19**
Diving	7	1		8
Water sports	1			1
Tourism	9		1	10
Traditional user	**3**	**11**	**3**	**17**
Community action group	1	7	2	10
Civic group	1	4		5
Other traditional user	1		1	2
Total	**50 (58.1%)**	**21 (24.4%)**	**15 (17.4%)**	**86 (100%)**

To further investigate the implications of these findings, a similar analysis of the participants' priorities for the sub-criteria was extended to seek five clusters of statistically similar priorities as shown in Tables 14 and 15. These findings lead to the following observations:

- There are still three major clusters that include the great majority of participants, with each supporting the branch criteria of a different root criterion. The only difference is that the third cluster in Table 12 is now divided into two clusters, Clusters 3 and 4 in Table 14. Both of these clusters still support economic development but they have different priorities regarding which particular aspect of this criterion they prefer to achieve with MPA zoning. The former prefers "artisanal fisheries growth", while the latter favors "new employment growth". Hence, it may be possible that the third cluster from Table 12 may present an even weaker argument for forming a major coalition.
- The great majority of participants (slightly expanded) are still clustered in support of achieving environmental conservation through MPA zoning (Cluster 1). The additional analysis simply points out that the two aspects of this criterion that are more important to them are "habitat protection" and "endangered species protection". It should also be

Table 14
Potential coalitions (clusters) and their priorities for the sub criteria: San Andres

General criteria	Special criteria	Cluster1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	ANOVA	
							F	Sig.
Economic development	**A1. Artisanal fisheries growth**	**0.03**	**0.039**	**0.062**	**0.406**	**0.003**	**29.47**	**0.000**
	A2. Local industrial fisheries growth	**0.024**	**0.005**	**0.023**	**0.078**	**0.000**	**3.63**	**0.009**
	A3. National industrial fisheries growth	0.006	0.001	0.002	0.008	0.000	1.8	0.136
	A4. Dive tourism growth	0.014	0.002	0.01	0.003	0.000	2.18	0.078
	A5. Ecotourism growth	0.033	0.012	0.01	0.066	0.000	2.34	0.062
	A6. Large scale tourism growth	0.022	0.009	0.007	0.001	0.000	0.56	0.695
	A7. New employment growth	**0.03**	**0.026**	**0.573**	**0.007**	**0.000**	**46.89**	**0.000**
Environmental conservation	**B1. Endangered species protection**	**0.133**	**0.021**	**0.007**	**0.029**	**0.012**	**2.8**	**0.031**
	B2. Fisheries recovery	**0.052**	**0.024**	**0.013**	**0.025**	**0.02**	**2.55**	**0.045**
	B3. Habitat protection	**0.174**	**0.046**	**0.055**	**0.029**	**0.011**	**2.98**	**0.024**
	B4.Habitat recovery	0.089	0.045	0.004	0.024	0.01	1.8	0.136
Equity	**C1. Equitable access**	**0.041**	**0.017**	**0.044**	**0.018**	**0.89**	**194.96**	**0.000**
	C2. Equitable exploitation	0.039	0.017	0.021	0.018	0.000	1.57	0.19
	C3. Equitable participation	**0.058**	**0.025**	**0.11**	**0.019**	**0.000**	**2.8**	**0.031**
Implementability	D1. Compliance with existing authorities	0.031	0.001	0.001	0.006	0.000	0.57	0.689
	D2. Enforcement	0.02	0.002	0.002	0.015	0.000	2.34	0.062
	D3. Location of zone boundaries	**0.014**	**0.002**	**0.000**	**0.01**	**0.000**	**3.62**	**0.009**
	D4. Stakeholder agreement	**0.021**	**0.003**	**0.006**	**0.009**	**0.003**	**3.13**	**0.019**
	D5. Voluntary compliance	0.019	0.006	0.003	0.009	0.002	2.06	0.094
Traditional island environment	**E1. Harmony of sea and land uses**	**0.045**	**0.093**	**0.003**	**0.013**	**0.000**	**2.71**	**0.035**
	E2. Planned coastal development	**0.042**	**0.075**	**0.007**	**0.185**	**0.000**	**2.91**	**0.026**
	E3. Preservation of environmental beauty	0.027	0.147	0.001	0.012	0.000	7.13	0.000
	E4. Preservation of traditional activities	0.037	**0.383**	0.038	0.01	0.049	31.06	0.000

Table 15
General and special interest affiliation of potential coalition (cluster) members with similar priorities for the sub-criteria: San Andres

Special interest category	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Total
	Most favored criterion					
	Habitat protection	Preservation of traditional activities	Planned coastal development	New employment growth	Equitable access	
Conservation	**7**	**2**		**1**		**10**
Environmental NGO	5	2				7
Env./native rights NGO	2			1		3
Education	**4**	**1**		**1**		**6**
Secondary programme		1				1
Technical programme	2					2
University programme	2					2
Post-graduate programme				1		1
Fisheries	**6**	**2**	**4**		**2**	**14**
Artisanal fishers	6	2	4		2	14
Government	**15**	**4**		**1**		**20**
National government	2	2				4
Local government	10	2		1		13
Armed forces	3					3
Tourism/recreation	**18**	**1**				**19**
Diving	7	1				8
Water sports	1					1
Tourism	10					10
Traditional user	**4**	**11**	**1**	**1**		**17**
Community action group	1	7	1	1		10
Civic group	1	4				5
Other traditional user	2					2

noted that, as in the case of the general criteria, this cluster includes the majority of members of the largest stakeholder groups.

- The priorities of Cluster 2, the other significant cluster, are still associated with protection of a traditional island environment, but now it is apparent that the aspect of this criterion that these participants want MPA zoning to achieve is 'preservation of traditional activities''. Thus, it appears that this potential coalition might be able to augment its constituency by attracting members from those of the third cluster that support ''artisanal fisheries growth'', which can be viewed as a traditional activity in San Andres.

For the final decision makers, the interpretation of the above findings points to cooperation with the first potential coalition (cluster) as the starting point of an effort to confront the priority conflicts among the participants. The outcome of this cooperation can be a priority set for all the criteria that can be applied to the evaluation of alternative MPA zoning plans with the expectation of a broad support of the results of this evaluation. The major obstacle that this effort might have to overcome is potential opposition from the second cluster, especially if the latter is successful in attracting new members from those of the third coalition who support artisanal fisheries growth as the criterion for choosing a MPA zoning plan (with the above stated rationale). We must emphasize, however, as we did in the case of the Galapagos case study, that differences in priorities do not always lead to considerably different evaluations of specific alternative choices, in this case MPA zoning plans. Hence, it may very well be the case that the priority conflicts between the two major potential coalitions might not after all undermine their common support of a final choice of an MPA zoning plan.

3.5. Preferences for area distributions among MPAs

As was indicated in the introduction, in the San Andres case study the MPA related conflict analysis was extended to the participants' preferences for area distributions (sizes) among different types of MPAs. The rationale was that ''size'' is one of the two contentious dimensions of MPA zoning plans with ''location'' being the other. The input for this analysis was generated by the participants' answers to the second part of the AGORA questionnaire which asked the participants to consider five types of MPA zones and distribute a hypothetical space of 100 square miles among them.

The definition of the considered MPAs is given in Table 16. Figs. 1–7 show the mean values and the 95% CL of the percent area allocation preferred by the general interest categories of participants. From these figures:

- All the interest groups allocate a very high percentage of the available hypothetical space to the ''artisanal fishing'' MPA with the exception of the tourism group which assigns a slightly higher percentage to the ''no-take'' MPA.
- The ''no-entry'' MPA receives an average percentage of 15% from all interest groups.
- The ''no-take'' MPA receives an average percentage of 17% except in the case of Tourism group which allocates to this MPA their highest percentage (close to 30%).
- The ''special-use'' MPA is allocated less than 15% from all the groups.
- The ''unrestricted'' MPA receives its highest allocation by the education and government groups but even these groups do not apportion more than an average of 20% of the hypothetical space to this MPA.

Table 16
Definition of MPAs zones considered for the San Andres case study

No-entry	No one can use or enter this zone except for monitoring and research
No-take	Use is allowed, but nothing can be taken or extracted from this zone
Artisanal fishing	This zone is for traditional fishing only
Special use	This zone is for a specific use, such as a port, marina, or other use that could cause major conflicts. These specific uses will be determined during MPA planning
Unrestricted	This zone is open for many uses. Basic regulations will apply to prevent environmental damage

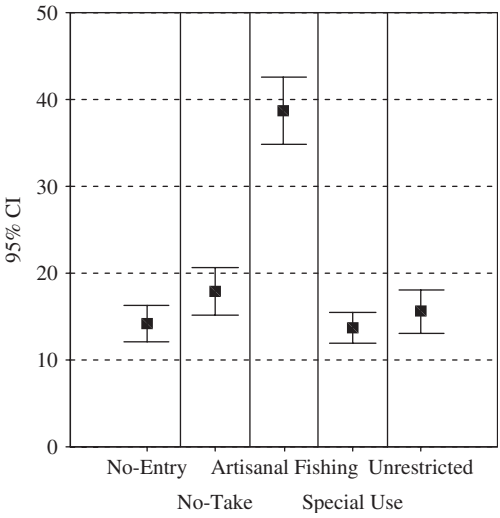

Fig. 1. Mean values and 95% CL of percent area allocation for MPAs by all participants: San Andres.

Further analysis of these preferences by AGORA for the purpose of identifying potential coalitions and cooperation strategies yielded the results shown in Tables 17 and 18. Their study leads to the following conclusions:

- The amount of space allocated to the "artisanal fishing" and "no-take" MPAs is mainly responsible for the separation of the participants in the 3 clusters shown in Table 17.
- There is the potential for the formation of a very large coalition (approximately 75% of the participants) consisting of clusters 1 and 3 with great influence potential. The only obstacle is the difference of approximately 20% between the space these clusters allocate to the "artisanal fishing" and "unrestricted" MPAs.
- Encouraging signs for overcoming this obstacle are provided by:
  - The congregation of the majority of fishermen to one of these clusters (the third). This group may be expected to be more receptive to the potential of cooperating with

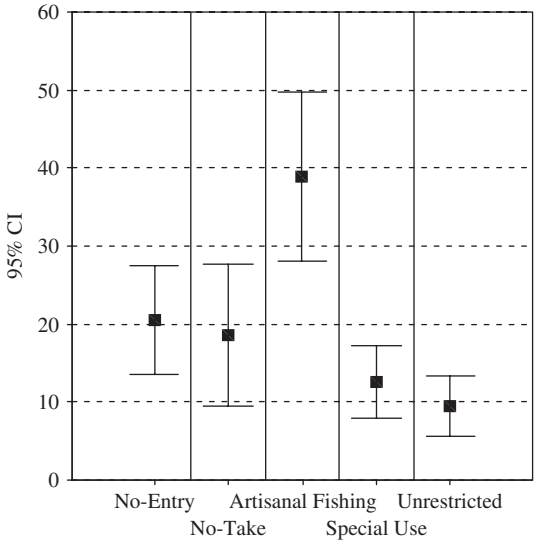

Fig. 2. Mean values and 95% CL of percent area allocation for MPAs by the conservation group: San Andres.

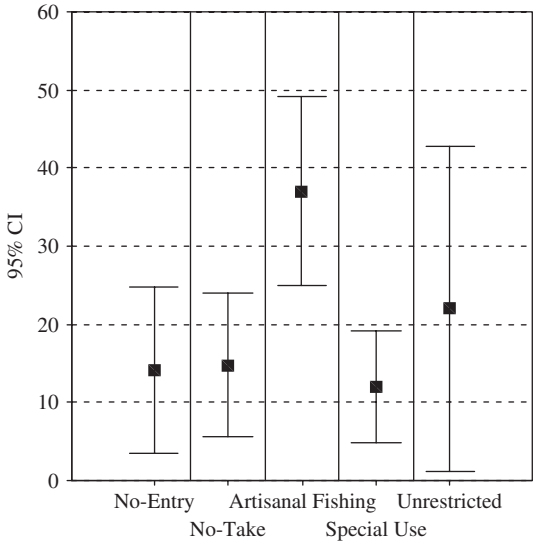

Fig. 3. Mean values and 95% CL of percent area allocation for MPAs by the education group: San Andres.

the first cluster with whom they differ on the allocation to the "unrestricted" MPA rather than with the second cluster with whom they differ regarding the size of the more restricted "no-take" MPA (Table 18).

- The apparent lack of solidarity among the rest of the interest groups (other than fishermen and divers), which implies a greater possibility of persuasion and/or bargaining (Table 18).

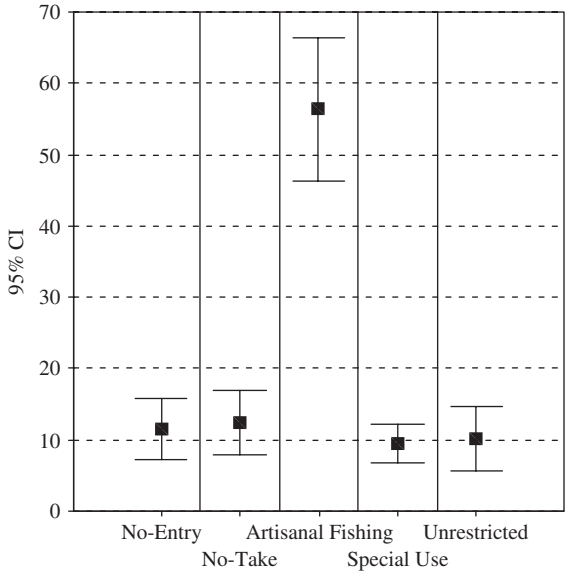

Fig. 4. Mean values and 95% CL of percent area allocation for MPAs by the fisheries group: San Andres.

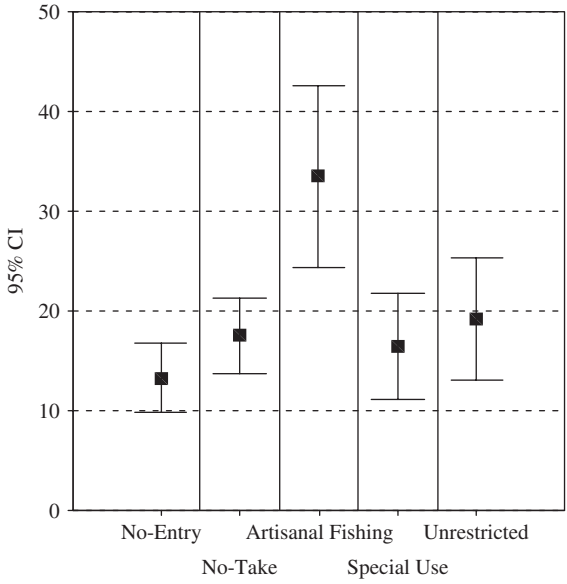

Fig. 5. Mean values and 95% CL of percent area allocation for MPAs by the government group: San Andres.

- The membership in this broader potential coalition of clusters 1 and 3 of the majority of the participants affiliated with "government" (13 out of 17 congregate to cluster 1 according to Table 18). This group might have the added incentive for resolving the

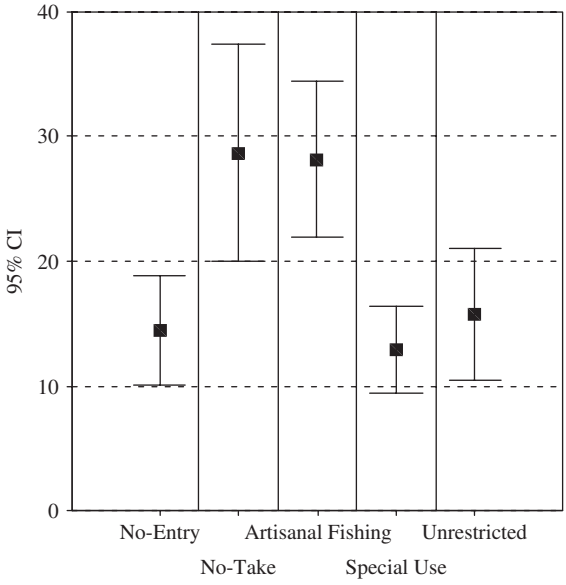

Fig. 6. Mean values and 95% CL of percent area allocation for MPAs by the tourism group: San Andres.

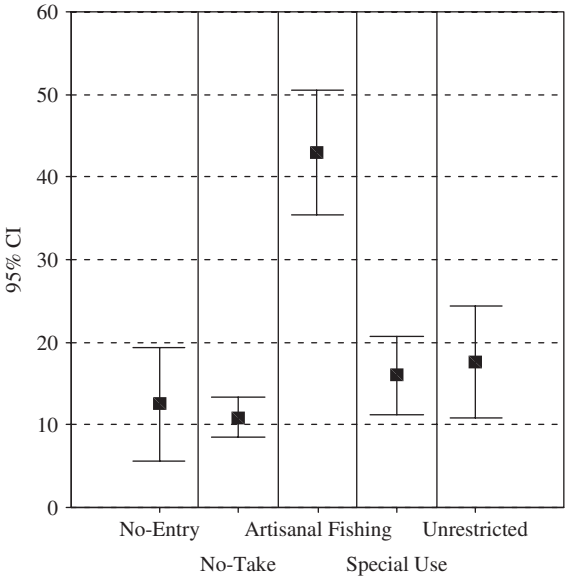

Fig. 7. Mean values and 95% CL of percent area allocation for MPAs by the traditional users group: San Andres

conflict between clusters 1 and 3 of successfully maximizing their institutional influence in addition to satisfying their own preferences.

- In essence, only the "Divers" and to a lesser extent the "Environmental NGO", might offer an opposition to the choices of the broad potential coalition of clusters 1 and 3

Table 17
Potential coalitions (clusters) and their preferences for area distributions among MPAs: San Andres

Zones	Cluster 1	Cluster 2	Cluster 3	ANOVA	
				F	Sig.
No-entry	10.96	22.41	11.36	14.616	0.000
No-take	13.82	**32.73**	11.36	42.241	0.000
Artisanal fishing	**32.68**	21.32	**55.45**	76.803	0.000
Special use	16.25	14.00	11.30	3.006	0.055
Unrestricted	26.29	9.55	10.52	32.842	0.000

Table 18
General and special interest affiliation of coalition (cluster) members with similar preferences for area distributions among MPAs: San Andres

General and special interest affiliation	Cluster 1	Cluster 2	Cluster 3	Total
Conservation	**2**	**3**	**5**	**10**
Environmental NGO	2	3	2	7
Environmental/native rights NGO			3	3
Education	**2**	**1**	**2**	**5**
Secondary programme	1			1
Technical programme			2	2
University programme		1		1
Post-graduate programme	1			1
Fisheries	**2**	**1**	**11**	**14**
Artisanal fishers	2	1	11	14
Government	**9**	**4**	**4**	**17**
National government	2		1	3
Local government	6	3	3	12
Armed forces	1	1		2
Tourism/recreation	**7**	**10**	**2**	**19**
Diving	2	6		8
Water sports		1		1
Tourism	5	3	2	10
Traditional user	**6**	**2**	**9**	**17**
Community action group	4	1	5	10
Civic group	2	1	2	5
Other traditional users			2	2
Total	**28**	**21**	**33**	**82**

regarding area size of the defined five types of MPAs. These participants constitute the core of the second cluster and in the case of the former the majority of their special interest group (Table 18).

This analysis of the participants' preferences for area allocation among MPAs provides more encouraging evidence for the potential of a very extensive sustainable cooperation than the analysis of the participants' priorities for the criteria of evaluation of alternative MPA zoning plans. Moreover, it appears that there is an inconsistency between the finding that a majority of participants assigns the highest priority to the criterion of preserving the environment and that which indicates that only a minority assigns a high percentage of area to the MPAs that best reflect this concern (those forming the second cluster in Table 17). However, the following points should be kept in mind when these differences are contemplated:

- The two analyses are complementary not counteractive. There is still an important dimension of a zoning plan, that of actual physical designation of MPAs, which might create conflicts despite the fact that in terms of its area allocation among MPAs it might not invite opposition. In such a case, the previous analysis of the participants' priorities for the evaluation criteria provides the critical guide to cooperation strategizing.
- There may be a difference in the participants' perception of what the various MPAs can achieve. In other words, a large number of the participants who allocate more area to artisanal fishing might truly believe that this particular activity is not detrimental to the environment and thus there is no need to allocate more area to "no-entry" and "no-take" MPAs.

4. Concluding comments

When a community of stakeholders faces a collective problem and there are conflicting interests in its resolution, there are two major approaches to their search for a final solution. They can trust that a benevolent leader will seek an unbiased analysis of the problem by "objective" experts and choose the solution that this analysis, based on some model of reality, will recommend. Alternatively, they can seek a direct proactive participation in the decision making process with the opportunity to learn of all the opposing views and develop strategies for influencing the final outcome through bargaining and cooperation with both their fellow stakeholders and those with the responsibility to decide.

Several realities favor the second approach for the stakeholders although the first might sound more concrete. The most basic is that rarely, if ever, does expert analysis suggest only one solution [2,4]. Hence, the necessity of competing for the satisfaction of one's own self-interest is not eliminated. Active participation in the decision process affords the opportunity to seek information regarding opposing views, think strategically, and attempt to harmonize self and collective interest through bargaining and co-operation. The only condition is that the participatory cooperative approach is not an open-ended colloquy but organized to offer this opportunity. An example of the former is the calls by decision makers for public input to decisions already made through mainly public hearings. The only benefit of this approach is for the final decision makers who actually seek only to assess the political feasibility of their decisions through this public participation.

An example of an organized participatory process, on the other hand, and its benefits for the stakeholders is offered by the reported research and its findings. It may not be surprising to any of the stakeholders in either case study that the most contentious issues regarding the zoning of MPAs are those indicated by the above analysis nor that these issues are supported by those general and special interest groups also identified by this analysis. However, if not for the above analysis it might have been very difficult for most of them to:

- Assess in some specific quantitative way the degree of general divisiveness among all stakeholders regarding the zoning of MPAs.
- Appreciate the potential for cooperation strategizing.
- Identify those who agree with them and may be partners in a potential coalition trying to influence the final decision.
- Evaluate the extent of their disagreement with the others with whom they have to compete.
- Draw the defining lines of strategies that they may follow to enhance the support for their choices, e.g. by debating specific issues with those whose priorities for these issues do not differ significantly from their own.
- Assist the decision makers to incorporate into the final decision their values in a concrete way by (a) developing solutions that respond to their preferences, e.g. for area allocation among MPAs as in the San Andres case study, and (b) evaluating all options with their criteria and priorities.

Without this information neither the self-interest nor the collective interest can be served in a sustaining way. This information enables the sustainable cooperation of stakeholders, with competing interests but also with a shared motivation, to think strategically and act cooperatively.

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Appendix A. Sample of the characteristic questions of AGORA

11. Question about General Values

Read This Part

Below are general values. Read carefully their definitions.

	VALUE	DEFINITION
A	ECONOMIC DEVELOPMENT	Development of the local economy
B	ENVIRONMENTAL CONSERVATION	Preservation of the environment and natural resources
C	EQUITY	Distribution of benefits in a righteous and just way
D	IMPLEMENTABILITY	Possibility to put into practice
E	TRADITIONAL ISLAND ENVIRONMENT	Preservation of traditional island quality of life

Fill In This Part:

To answer this question has 2 steps:

Step 1: List the values from most important to least important, using the letter that is next to the value.

Step 2: Determine the difference of importance between the values. If each pair of values is equal to you, put 1. If it's two times as important, put 2. If it's 10 times as important, put 10. Put any number you want.

	Step 1 (value letter)		**Step 2 (any number)**
What is the most important?	1. ___		
		⟹ How much more important is 1 than 2?	____
What is the second most important?	2. ___		
		⟹ How much more important is 2 than 3?	____
What is the third most important?	3. ___		
		⟹ How much more important is 3 than 4?	____
What is the fourth most important?	4. ___		
		⟹ How much more important is 4 than 5?	____
What is the last?	5. ___		

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